

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Amendment of the Commission's Rules with Regard)	GN Docket No. 12-354
to Commercial Operations in the 3550-3650 MHz)	
Band)	

COMMENTS OF REDLINE COMMUNICATIONS INC.

Redline Communications Inc. (“Redline”) hereby submits its comments on the Commission’s *Notice of Proposed Rulemaking* (“*NPRM*”) in the above-captioned proceeding.

I. STATEMENT OF INTEREST.

Based in Toronto, Canada, Redline is a global producer of specialized outdoor wireless broadband systems that operate in spectrum between 470 MHz to 38 GHz bands, including the 3550-3650 MHz (“3.5 GHz”) spectrum that is the subject of the *NPRM*. Redline specializes in designing and building such systems for U.S. and international customers in the energy, telecommunications, state and local government, and military sectors.¹ Recent Redline deployments include:

- Utah Department of Transportation (UDOT). The UDOT Traffic Operations Center (“TOC”) uses CommuterLink, a computer controlled Intelligent Transportation System (ITS), to manage traffic and provide travelers with up-to-date information via variable message signs (VMS) and the 511 Travel Information Line. Because the geographic area under UDOT’s purview is quite large and thus is best served by a wireless solution, UDOT uses Redline AN-80i radios to manage traffic in real time via the 3.65, 5.4 and 5.8 GHz bands. The network covers interstate route I-15 throughout Utah County, supporting traffic sensors and traffic ramp meters at more than 200 locations.
- Avondale, AZ. Redline’s RDL-3000 Virtual Fiber™ family of radios was selected for the City of Avondale’s wireless public safety network, which, for

¹ Additional information about Redline is available at the company’s website, www.rdlcom.com.

example, the City uses to monitor water quality. Redline's radios are connected to water sensors placed at wells and water pumps to send real time data to a central monitoring station, where an automated system is programmed to detect any possible tampering. [add frequencies that this product uses]

- Alaska (North Slope). GCI Industrial Telecom uses Redline's AN-80i radios to provide high capacity communications links that connect remote well heads and aggregation sites for oil drilling operations on Alaska's North Slope. Redline's wireless system delivers links as long as 80 km, covering an area of 1200 square miles at temperatures that drop to -40° F, at far less cost than wireline or satellite solutions.

As recognized in the *NPRM*, “[d]emand for wireless broadband capacity is growing much faster than the availability of new spectrum. . . . To meet this demand, future generations of wireless technology and services must continue to increase their yield of bits per hertz per second.”² Redline's experience in the marketplace confirms as much – indeed, in response to increased user demand in the spectrum in and around 3.5 GHz, Redline recently announced that its entire family of RDL-3000 wireless broadband systems is now equipped to operate in the 3300-3800 MHz band.³ Redline thus has a direct and substantial interest in the FCC's regulatory approach to opening the 3.5 GHz band for commercial use in the United States.

II. TVWS IS AN APPROPRIATE BLUEPRINT FOR REGULATING USE OF THE 3550-3650 MHZ BAND.

Redline believes that the best interests of 3.5 GHz users will be served by an FCC authorization process that facilitates streamlined access to the spectrum, but without compromising the legitimate interference protection expectations of licensed users. At a minimum, this requires (1) a licensing/registration process that provides the FCC and potential users with complete information as to how and where the spectrum is being used,

² *NPRM* at ¶ 2.

³ <http://finance.yahoo.com/news/redline-launches-additional-licensed-spectrum-130900847.html> (rel. Feb. 13, 2013).

(2) certainty as to the interference rights of new and incumbent co-channel and adjacent channel users, and (3) a workable and efficient process for resolving potential or existing interference competing users in and around 3.5 GHz.

Redline believes that with appropriate planning and testing these objectives could be achieved by modeling the proposed Spectrum Access System (“SAS”) on the TV white space (“TVWS”) database concept, as suggested in the *NPRM*.⁴ Thus far, Redline’s experience with the TVWS database generally has been positive. The test sites used in the U.S. confirmed that the database was accurate in determining what signal levels would exist at specified geographic locations, at a given height and antenna polarization. This, in turn, gives Redline greater assurance that a particular network design will provide predictable levels of data throughput and latency under a variety of assumed conditions.

To maximize the benefits of this approach, the SAS should include the data points for incumbent operations that are automatically protected under the new 3.5 GHz rules, and Priority Access users should be required to register the coordinates of their locations in the database. Also, 3.5 GHz devices should be required to incorporate geolocation technology.

In Redline’s view, alternative solutions such as dynamic frequency selection (“DFS”) and contention-based protocols have proven to be unworkable due to equipment certification delays, unpredictable performance during deployment, and ineffectiveness at discouraging spectrum squatting and inefficient use of spectrum generally.

III. REDLINE GENERALLY SUPPORTS THE FCC’S PROPOSED TECHNICAL RULES FOR THE 3550-3650 MHZ BAND.

⁴ *NPRM* at ¶ 95.

Redline supports the Commission’s proposed power limit (transmit power limit = 23 dBm, with a maximum gain of 7 dBi) and use of the 3.65 GHz spectral mask ($43+10\log P$) for the 3.5 GHz band.⁵ In particular, Redline’s prior experience at 3.5 GHz in other countries confirms that a strong spectral mask is essential for ensuring that users do not tread on each other’s spectrum. This is especially so where high-power “macro” base stations share the same coverage area as small cell base stations and thereby cause RF blocking of low-cost CPE devices. Similar results occur where “dirty” radio transmitters cause adjacent channel interference, resulting in poor spectrum efficiency as modulation rates drop. The technical fixes for these problems, to the extent they exist, are extremely expensive. Conversely, the proposed $43+10\log P$ will be an effective and cost-efficient solution that is easy to implement, particularly as vendors are already familiar with it and routinely build equipment to that specification.

IV. THE COMMISSION SHOULD APPLY ITS 3550-3650 RULES TO THE 3650-3700 MHz BAND.

Redline supports the Commission’s proposal to expand the 3.5 GHz rules so that they also cover the 3650-3700 MHz (3.65 GHz) band.⁶ The marketplace reality is that manufacturers will not build separate sets of equipment for the 3550-3650 MHz and 3650-3700 MHz bands. Rather, as Redline and others have done, they will build equipment capable of operating across the 3550-3700 MHz for ease of operation and economies of scale. In this way, manufacturers can build one radio hardware platform controlled by software that works across the entire band, and facilitate co-existence of multiple users by incorporating start/stop frequencies, utilizing different channel sizes, and limiting transmitter power per Commission regulations. Also, there are many

⁵ *Id.* at ¶¶ 131, 138.

⁶ *Id.* at ¶ 77.


types of fixed services that will be common to the 3550-3650 MHz and 3650-3700 MHz bands so it makes little sense to have one set of rules for the former but not the latter.

Lastly, Redline supports the Commission's proposal to create Higher Power Operation Zones for 3.65 GHz users.⁷ Redline is not opposed to the possibility of permitting 3.65 GHz service providers to use a higher maximum antenna height in rural areas, provided that there is sufficient record evidence that this would not materially increase interference risks for other users. This policy can be enforced via proper use of the SAS database.

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WHEREFORE, Redline Communications Inc. requests that the Commission adopt new rules for the 3550-3660 MHz band in accordance with the comments set forth above.

Respectfully submitted,

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⁷ *Id.* at ¶ 79.